



Final Report Form for New Small Production Wells for Small Community Water Systems December 2007*

PROJECT NAME: _____

TOWN/CITY: _____ DATE: _____

EPA ID # _____

PURPOSE: This form, when complete, will provide the information required for small well siting final reports under Env-Dw 301, *Small Production Wells for Small Community Water Systems*. You don't have to use this form; however, based on experience, the NH Department of Environmental Services (NHDES) has found that use of the form speeds up the siting process. If you prefer to produce an original report, be sure to provide all the information required under the rule. NHDES recommends this form be used as a checklist to help ensure your report is complete. Helpful information and reminders are provided throughout the form and are printed in *italics*. Copies of this form and other useful publications may be found at the following website:
<http://www.des.nh.gov/DWSPP/newcomm.htm>.

INSTRUCTIONS:

A. Obtain copies of the following from your files or NHDES:

1. Preliminary report for the project and all NHDES review and approval letters.
2. Pumping test data and water quality analysis results from the pumping test.
3. Well completion report and any field logs of borehole geology for the site.
4. Administrative Rule Env-Dw 301, *Small Production Wells for Small Community Water Systems, October 2007*.
5. Administrative Rule Env-Ws 372, *Design Standards for Small Community Water System, November 2005*.
(Small community water systems are subject to design criteria under Env-Ws 372. This document assists you in making sure the new well project will meet those criteria.)
6. *The Applicant's Toolkit for Siting New Small Community Wells in New Hampshire, December 2007*.
7. The pumping test guide, *A Field Guide for Pumping Test Operators*
8. Contact NHDES staff to request a GIS Map and Inventory of known and potential contamination sources and water supplies for your site. The staff person will need a location map of your site (usually a USGS map or equivalent). This may be faxed to (603) 271-0656,

to the attention of "GIS Map & Inventory Request". When you receive the map and inventory contact NHDES staff at 271-8808 to schedule a file review if any new known contamination sources have been identified. *(Existing known contamination sites should have been reviewed during the preliminary stage of the well siting process.)* To make a file review appointment contact NHDES staff at **271-8808** after you receive your map and inventory and determine which files you need to review. When you arrive at NHDES for your file review, sign in with the receptionist and tell her you are there to see the Waste Management Division file librarian.

- B. Review the well siting rules and guidance materials obtained above. You should use these materials to assess your water system design and site specific well siting needs.
- C. Complete this form by answering all questions from top to bottom, unless instructed to skip to another section and provide the appropriate attachments.
- D. It is very important to recognize that an incomplete form, like an incomplete final report, will be returned for completion before being reviewed by NHDES. Reports are reviewed in the order they are received and return of your report will slow the approval process.
- E. Submit completed form to:

New Community Well Sitings
Drinking Water & Groundwater Bureau
29 Hazen Drive
Post Office Box 95
Concord, NH 03302 -0095

For help with this form or other well siting concerns call NHDES staff at (603) 271-2947.

*Information contained in this form is current as of December 2007. Statutory or regulatory changes that may occur after December 2007 may cause part or all of the information to be invalid. If there are any questions concerning the status of the information please contact NHDES at (603) 271-2947.

1.0 GENERAL INFORMATION

(This section asks you to identify the people and companies responsible for the well siting and water system and to describe the well site. This information will help ensure clear communication about the well siting.)

1.1. Date of NHDES Preliminary Report Approval Letter: _____ *(If the Preliminary Report approval is greater than 4 years old, it has expired and a new Preliminary Report must be submitted.)*

1.2 Project Contacts:

1.2a Project Contact. *(Person completing this form? This person must have a PE, PG, water well contractor, or pump installer license or a water system operator certification.)*

Name _____

Address _____

Company _____

Phone Number _____

License/Certification Type & Number _____

1.2b Project Owner. *(Who currently owns the proposed water system and well site?)*

Name _____

Address _____

Company _____

Phone Number _____

1.2c Will the person named above retain ownership of the water system after well siting approval is obtained?

YES___ NO___

If **YES**, go to (1.3).

If **NO**, identify the future water system owner:

Future Owner _____

Address _____

Company _____

Phone _____

1.3 As-Built Well Location & Description:

(EPA requires NHDES to report the location of each well in reference to the pump station. Please provide a description in this format. For example, Well # 1 is 150 feet SW of the pumphouse.)

1.4 Build Out:

What is the total number of service connections, units and bedrooms proposed for this system at build-out? How many exist now?

Service connections; Build-out: _____ Existing: _____

Units; Build-out: _____ Existing: _____

Bedrooms; Build-out: _____ Existing: _____

1.5 Source Capacity:

What is the total source capacity required for the system under Env-Ws 372.12? *(Please note that Env-Ws 372.10(d) requires irrigation be included in source capacity estimates. If **landscape irrigation** is planned for this project, this use **must** be included in your source capacity calculations even if a separate irrigation well will be used for this purpose. On average, irrigation water use can be calculated using 700 gpd per structure. If extensive landscaping is proposed, 1,000-1,200 gpd per structure should be used to estimate irrigation water use.)*

_____ Gallons per Day (gpd)

1.6 Site Sketch:

Provide a sketch showing the well location and **everything** existing and proposed, within 500 feet of the new well. Use a scale large enough to provide detail. *(This map may also be used to supply information for sections 2.1, 3.5a, and 5.1a of this report. Include elevation contours, if available.)*

2.0 SANITARY PROTECTIVE AREA

2.1 Sanitary Protective Area Radius:

What is the radius of the sanitary protective area (SPA) for each well? Complete Table 2-1 for each well, using the chart below to determine radii. *(The final size of the SPA will depend on the approved permitted production volume(s) of the well(s). The SPA for each well is a circle, centered on the well, with a specific radius. Match the volume for each well to the SPA radius in the following chart. **If more than one well is in one SPA, combine the volumes of those wells and identify a new radius for each new well.** Please note, each well must have a separate SPA.)*

SANITARY PROTECTIVE AREA RADII

| <u>Permitted Production Volume (gal)</u> | <u>Radius</u> |
|--|---------------|
| Less than 14,400 | 150 feet |
| 14,401 to 28,800 | 175 feet |
| 28,801 to 57,599 | 200 feet |

Table 2-1, SANITARY PROTECTIVE AREA RADII

| Well Name/Number | Permitted Production Volume | Radius |
|------------------|-----------------------------|--------|
| | | |
| | | |
| | | |

- Show the SPA for each well on the site sketch in section 1.6.

2.2 Land Use:

Is all the land inside the SPA maintained in a natural, undisturbed state and will it stay that way after build-out?

YES _____ NO _____

If **YES**, describe the make up of the land within the SPA. (*Such as woods, meadow, and wetland.*)

If **NO**, was a waiver obtained for all land uses not required for operation and maintenance of the well and water system?

YES _____ NO _____

If **NO**, see Worksheet A for directions to apply for a waiver. **The well site cannot be approved unless a waiver is obtained for any non-water supply related activity.**

2.3 Legal Control of the Sanitary Protective Area:

2.3a Does the water system currently own all the land in the sanitary protective area(s)?

YES ___ NO ___

If **YES**, identify the grantee, registered deed number(s), county name and date(s) of registration.

Grantee: _____

Deed No(s): _____ County: _____

Date(s): _____

If **NO**, how has the water system gained legal control of non-owned land in the SPA?
(Easement, condominium covenant, joint use agreement, etc. *)

***Attach a copy of the recorded document providing legal control of the SPA.**

(If the water system is still in the process of obtaining an easement, **STOP!** Final well siting approval will not be given until legal control is obtained or a waiver to obtaining legal control is granted.)

2.3b Will the water system be transferred at a later date to another entity such as an association or private operator?

YES _____ NO _____

If **YES**, when will control of the water system be transferred and to whom? (Please note that control of the well's SPA must stay with the system.)

When and Who? _____

3.0 PUMPING TEST

(Please note, systems using multiple wells to meet a required source capacity which is 57,600 gallons per day or more are regulated under Env-Dw 302, Large Production Wells for Community Water Systems. Contact NHDES for a copy of those rules.)

3.1 Non-Standard Testing:

Was a test other than the Standard Test as defined in Env-Dw 301 used?

YES _____ NO _____

If **YES**, please describe the method used.

3.2 Test Performer: Usually several people are involved in the pumping test operations and planning. Please list below all individuals or companies who participated in performing the pumping test.

3.2a Who was responsible for designing and directing the pumping test and making decisions during the test? (Such as making sure the test was conducted as approved, including preliminary report approval conditions from NHDES, that the water was discharged in the approved location, that a constant pumping rate was maintained, that measurements were made correctly and on schedule and was not ended before stabilization was achieved.)

Name _____

Address _____

Company _____

Phone Number _____

3.2b Was the pump permanently installed in the well during the pumping test?

YES _____ NO _____

If **Yes**, indicate in 3.2c below the company responsible for permanently installing the pump.

3.2c If different from 3.2a above, list the company responsible for installing the pump and discharge setup for the pumping test and/or reading and recording measurements taken during the test. *(List all responsible parties and describe the tasks they performed. Please note that if the pump was permanently installed, the person performing this task must possess a N. H. pump installer's license.)*

Name _____

Address _____

Company _____

Phone Number _____

License Number _____

3.3 Operation of Wells *(If this is a new water system, go to 3.3b.)*

3.3a. Existing Well Operation:

3.3a.1 How were the system's existing wells operated during the testing? *(Please note that all existing wells required to meet the source capacity requirements of the system should have been pumped during the testing. Complete Table 3-1.)*

Table 3-1, OPERATION OF EXISTING WELLS

| Well | Pumping Rate (gpm) | Operation Schedule <i>(Constant rate, as needed, or shut off)</i> |
|------|--------------------|---|
| | | |
| | | |
| | | |

3.3a.2 How were constant pumping rates maintained in the existing wells? Describe how the rates were managed to offset hydraulic head changes. What was the range of pumping rates after the first hour?

3.3a.3 How were pumping rates measured? *(Complete Table 3-2 for each existing well.)*

Table 3-2, PUMPING RATE MEASUREMENTS

| Well Name/ Number | Equipment | Method | Schedule <i>(Frequency of Measurement)</i> |
|----------------------|-----------|--------|--|
| | | | |
| | | | |
| | | | |

3.3b. New Well Operation.

3.3b.1 How were the system's new wells operated during the testing? How was a constant pumping rate maintained? Describe how each rate was managed to offset hydraulic head changes. *(Pumping rates must be constant. Please note that documentation of totalizing meter readings must be provided to demonstrate that pumping rates did not vary more than +/- 5%. Include all recorded totalizing meter readings in the well log.)* Complete Table 3-3.

Table 3-3, OPERATION OF NEW WELLS

| Well | Pumping Rate (gpm) | Constant Rate Maintenance |
|------|--------------------|---------------------------|
| | | |
| | | |
| | | |

3.4 Discharge Location:

3.4a. Describe the discharge locations used during the pumping test in Table 3-4. Show these locations on the site sketch provided for Section 1.6.

TABLE 3-4, FINAL DISCHARGE LOCATIONS

| Well | Discharge Location | Distance from Well |
|------|--------------------|--------------------|
| | | |
| | | |
| | | |

3.4b. Was there any ponding at the discharge point or anywhere along the discharge line(s)?
YES _____ NO _____

If **YES**, describe the location, depth and area of ponding. How close was this ponding to the pumping well(s)? Did the ponded water reach any natural outfall? What type of soil is in the ponded area?

3.5 Water Level Measurement:

How were water levels measured in each well? *(List type of equipment used and measurement methods. Complete Table 3-5 for each well.)*

Table 3-5, WATER LEVEL MEASUREMENT

| Well | Equipment/Method |
|------|------------------|
| | |
| | |
| | |

3.6 Pumping Test Results:

3.6a What were the start and end dates of the pumping test? How long was the test, in hours?

Start Date: _____

End Date: _____ Hours: _____

3.6b Attach a copy of the **original** pumping test log (including recovery) in the format depicted in Worksheet B. Include all measurement times, weather conditions, pumping rates, and drawdowns or water levels for each well. *(If used, include a semi-log plot of time vs drawdown for each well. If a continuous read datalogger was used, DO NOT submit the entire printout. Present the pertinent data in a chart noting recorded measurements in increments no greater than every 5 minutes during the first hour, no less than every 15 minutes during the second hour, and once an hour thereafter.)*

3.7 Well Completion Report

Attach a copy of the well completion report obtained from a licensed water well contractor. *(The original must be submitted to the Water Well Program.)*

3.8 Well Casing & Pump Information:

3.8a What are the depths and casing sizes for each well? At what depths were the pumps set in each well (even if a temporary pump was used)? *(Complete Table 3-6 for each well.)*

Table 3-6, WELL CASING & PUMP INFORMATION

| Well Name/Number | Pump Depth/Feet | Well Depth/Feet | Casing Length & Diameter |
|------------------|-----------------|-----------------|--------------------------|
| | | | |
| | | | |
| | | | |

3.9 Stabilization:

Was the pumping test stopped before stabilization was reached? YES ___ NO ___

If **YES**, document why this decision was made.

3.10 Recovery Period:

How long was the recovery period for each well and what was the percent of recovery?

Hours: _____

Percent of total drawdown: _____

3.11 Impacts to/from the New Well:

3.11a Which of the following impacts from/to the new well were assessed and how? Check all that apply. *(If private or other public wells were monitored, attach water level measurement data.)*

☐ Saltwater intrusion.

☐ Fluctuations in water levels in nearby surface waters.

☐ Groundwater contamination plumes.

☐ Fluctuations of water levels in nearby wells.

Assessment Method? _____

3.11b If there were any impacts noted, how will the impacts be managed? *(Attach a detailed management plan.)*

4.0 LABORATORY ANALYSIS RESULTS

4.1 Sample Collection and Delivery:

Who was responsible for collecting water quality samples and delivering them to the laboratory?

Name: _____

4.2 Analyses and Laboratory:

4.2a. Sample Collection and Analysis: Which wells were tested, when were the samples collected, how were they transported, and what parameters were analyzed? *(Complete Table 4-1 for each well.)*

Table 4-1, WATER QUALITY MONITORING

| Well | When Was Sample Collected? | How Was Sample Transported? |
|------|----------------------------|-----------------------------|
| | | |
| | | |
| | | |

4.2b. What laboratory analyzed the samples and for which parameters? *(Complete Table 4-2 for each laboratory. The laboratory must have current N.H. certification for each analyses performed.)*

- **Attach a copy of complete laboratory reports for all wells.**

Table 4-2, LABORATORY

| Well | Laboratory | NH Certification Number | Analysis This Lab Performed |
|------|------------|-------------------------|-----------------------------|
| | | | |
| | | | |
| | | | |

4.2c Did any of the tested parameters exceed Safe Drinking Water Act primary or secondary standards?

YES ___ NO ___

If **YES**, how does the water system propose to manage water quality? *(Give only a general description of treatment methods, such as greensand filtration. Also note where treatment will be located. Do not submit water system treatment plans or designs with this report.)*

4.3 Microscopic Particulate Analysis (MPA)

Was MPA sampling performed? YES ___ NO ___

If **YES**, attach a copy of the results. If **NO**, explain why MPA sampling was not performed. *(For example, the bedrock well is greater than 200' to any surface water.)*

5.0 SOURCE WATER PROTECTION

(Refer to Env-Dw 301 and the Applicant's Toolkit for Siting New Small Community Wells, for more information and requirements.)

5.1 Refinement of the Wellhead Protection Area (WHPA) for Bedrock Wells:

(Please note, small overburden wells require an analytical delineation method based on information collected during the pumping test. Contact NHDES well siting staff for guidance, if needed. Bedrock wells use a default circle centered on the well.)

Did you use the default WHPA radius? YES ___ NO ___

If **YES**, identify the radii of the WHPA(s) using Table 5-1 below. *(Complete Table 5-2 for each well. If more than one well is onsite, combine the PPVs to identify the WHPA radius for each new well. For example, two wells with PPVs of 14,400 gpd, the radius is 2,050')*

- **Attach a map of the refined WHPA.** (This may be shown on the GIS map provided by NHDES.)

Table 5-1, WELLHEAD PROTECTION AREA RADII

| <u>Permitted Production Volume (Gal)</u> | <u>Radius</u> |
|--|---------------|
| Zero to 7,200 | 1,300 feet |
| 7,201 to 14,400 | 1,500 feet |
| 14,401 to 28,800 | 2,050 feet |
| 28,801 to 43,200 | 2,850 feet |
| 43,201 to 57,599 | 3,600 feet |

Table 5-2, WELLHEAD PROTECTION AREAS

| Well Name/Number | Permitted Production Volume | WHPA Radius |
|------------------|-----------------------------|-------------|
| | | |
| | | |
| | | |

If **NO**, provide a detailed technical description of the delineation method used. Include **All** of the following:

5.1a. Map showing delineated WHPA and description of the delineation method.

5.1b. Description of additional data collection activities, including any performed as part of the pumping test program.

5.1c. Description and justification of how the data was analyzed and reported.

5.2 GIS Map & Inventory:

Provide an up-to-date GIS Map and Inventory. If the ones submitted in the preliminary report are more than 90 days old, obtain an updated GIS map from NHDES and conduct a windshield survey.

5.2a Who performed the windshield survey? When?

Name: _____ Date: _____

Phone: _____

5.2b Are there any existing contamination sources within the Wellhead Protection Area?
YES _____ NO _____

If **YES**, document how the water system plans to manage those sources to minimize contamination of the wellhead.

5.3 Wellhead Protection Program:

The program is mandatory and includes updating the contamination source inventory every 3 years and sending groundwater protection educational materials to all municipalities, persons residing in, doing business in or otherwise occupying the wellhead protection area. These materials should be submitted on the water system's letterhead. *(See the Applicant's Toolkit for examples of the educational materials. The first round of educational mailings is due within three (3) months of new system startup, within 3 months of approval for existing systems or at the next regular waiver renewal if the system is already in the waiver program. Educational mailings must include Best Management Practices Rules [Env-Wq 401] for all potential contamination sources [PCS].)*
Who will be responsible for distributing these materials?

Name: _____

Address: _____

Phone: _____

- **Provide a copy of the Wellhead Protection Program cover letters on water system letterhead and all educational materials in two separate packets, PCS and non-PCS.**

6.0 APPROVAL TO CONNECT THE WELL

(Please note that approval to connect the well must be obtained under Env-Ws 372, Design Standards for Small Public Drinking Water Systems. See the attached Connection Requirements sheet if this well is for an existing system. Otherwise, contact Drinking Water & Groundwater Bureau [DWGB] staff at 271-2949 for further information.)

Who will be submitting distribution and connection design plans to DWGB staff?

Name: _____

Anticipated Date of Submittal: _____

Company: _____

6.1 SAMPLING WAIVERS

Implementation of a Wellhead Protection Program may qualify the applicant for a waiver from certain sampling requirements. If a sampling waiver is granted, it is estimated that the water system would **save more than \$11,000** in sampling costs over a nine-year period. New well approvals will be forwarded to the NHDES staff member in charge of sampling waivers who will contact the water system to assist them in applying for a waiver.

Before submitting, thoroughly check this form to be sure all questions are answered, all information is provided and all necessary attachments are included. Incomplete submittals will be returned by NHDES with the incomplete sections highlighted.

Preparer's Signature: _____

| | | |
|-------|-------|---------|
| _____ | _____ | _____ |
| Name | Title | Company |

Date: _____

As a reminder, have you enclosed the following?

1. As-built site sketch.
2. Copy of recorded easement or other legally binding document.
3. Pumping test log(s) including measurement times, pumping rates, water levels, recovery data, weather, semi-log plot(s) of time vs drawdown with the projected 180-day drawdown estimate, and well completion reports.
4. Site sketch of the discharge location.
5. Laboratory results including MPA, if performed.
6. Refined WHPA map.
7. All maps, data, and analysis required for an alternative WHPA delineation method, if one was used.
8. Updated GIS Map and Inventory.
9. Copy of educational materials on water system letterhead for Wellhead Protection Program.
10. Any other pertinent materials.

Worksheet A: Waiver Application

Project Name: _____ Town/City: _____

Date: _____

Which section of the **rule** are you requesting be waived? Env-Dw 301. _____. Describe the requirement.

Explain what needs to be waived at this well site. Provide diagrams where helpful.

Describe what hardship would be caused if the rule were adhered to. _____

Explain the alternative solution in detail. Provide diagrams where helpful. _____

Explain how the alternative is consistent with the intent of the rules.

Explain how the alternative would adequately protect human health and the environment.

Worksheet B: Pumping Test Log

Water System Name: _____ EPA ID#: _____

Description of Well Location: _____

Well Depth: _____ Depth of Pump Intake/Screen: _____

Reference Point Used to Measure Depths: _____

Test Performer Name: _____

Date Test Started: _____ Static (No Pumping) Water Level: _____

- Include Recovery Data.

| Day/Time | Elapsed Time | Depth to Water | Pumping Rate | Comments/Weather/Meter Readings |
|----------|--------------|----------------|--------------|---------------------------------|
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Connection Requirements Under Env-Ws 372

All wells at small community systems must meet requirements of the Department of Environmental Services (NHDES) **before** being put into service for use by the public. A small community system, with an unapproved source on-line, is subject to a fine. Env-C 602.08(c) provides for a fine of **\$1,000** per well that is connected, activated, or re-activated at a small community water system without NHDES approval.

Before using any water supply well or activating/re-activating any existing well, the following requirements must be met.

- **Well Siting Approval:** All wells must meet well siting criteria and obtain approval under Env-Dw 301. Contact Diana Morgan at 271-2947 or Diana.Morgan@des.nh.gov with any siting concerns.
- **Design Approval:** If connection requires installation of more than 500 feet of waterline, treatment facilities, or any other appurtenances; then plans and specifications must be approved by NHDES before the start of any construction. Contact Jim Gill at 271-2949 or Jim.Gill@des.nh.gov with submittal questions.
- **Water Meters:** Each source must have its own water meter. It must be installed in the line between the source and the first storage tank.
- **Sampling Taps:** Each well must have its own sampling tap. Each tap shall be placed in the line between the source and the first storage tank. It shall be at least 12 inches above the floor or finished grade.
- **Department Inspection:** Source connections requiring design approval as described above and those where new treatment will be applied shall also require an inspection by NHDES staff. The inspection shall occur after construction and **before** the source is used to provide water to the system.
- **Disinfection:** Wells and all waterlines, storage tanks, etc. must be flushed, disinfected with chlorine, re-flushed, and sampled for acceptable bacteria quality **before** being used to provide water to the system.
- **Sampling Schedule Update:** Each well must be sampled according to a revised schedule provided by NHDES. Contact Chemical Monitoring staff at 271-3907 with any questions about schedules.
- **Blend Approval:** Multiple sources may be sampled as a single, blended sample, only if all the system's active sources are wired to operate either simultaneously or to automatically alternate between pumping cycles. New blends must be approved by NHDES. Contact Engineering Field staff at 271-2513 to obtain blend approval.